

Installation Manual

20'W x 20'L x 8'H



Premium Canopies

Protective Weather Structures Inc.
5290 Orcutt Road
San Luis Obispo, CA 93401

PWS has dedicated years of steel building knowledge and construction to create the highest quality canopy made today. With a little effort following the detailed instructions during assembly, this canopy will provide you with years of enjoyment and unparalleled protection.

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Safety & Hazards Considerations

- Check that all tools and canopy components are available prior to erecting structure.
- Two people are necessary to safely erect the canopy.
- Do not allow children to play around the assembly area.
- Protect yourself by wearing protective work gloves, hard hat, safety glasses, and shoes during assembly. Some parts have sharp edges which may cause cuts or lacerations.
- Do not attempt to assemble canopy on a windy day as wind may create both difficulty assembling canopy, possible injury as well as damage to the structure.
- Do not attempt to assemble the canopy during wet weather, which may cause slipping off the roof.
- Keep in mind that the metal components may get hot on a sunny day. Protect your skin from touching the hot components.
- Keep canopy away from electrical sources such as overhead power lines and underground cables during assembly. Serious injury or death may occur if contact is made with a live power source.
- Do not attempt to assemble the canopy if tired, have taken medication, drugs, or alcohol.
- Adhere to manufactures safety advice for all tools and equipment used to erect the canopy.
- Consult with local planning and building authorities prior to constructing canopy.
- Do not install canopy in areas with snow and wind loads greater than the canopy's rating.
- Protect the canopy finish by assembling the components on a soft platform to prevent scratching and damage.

Tools Required

- Safety Goggle or Glasses
- Work Gloves
- Tape Measure (30 foot preferable)
- Level
- Framing Square
- 8lb+ hammer
- Utility Knife
- Pencil/Marker
- Hammer Drill (for existing concrete slab anchors only)
- Masonry Drill Bit – ½" x 8" Drill Depth (for existing concrete slab anchors only)
- Electric Screw Gun with Adjustable Torque Setting
- 5/16" Socket Drive (supplied)
- Socket Drive Extension
- Two 8' Step Ladders

Parts List

Part # and Description	
(1) Long Base Rails	2
(2) Base Rail Inserts	2
(3) Short Base Rails	2
(4) Columns	10
(5) Roof Truss	10
(6) Truss Crown Inserts	5
(7) Cord Inserts	5
(8) Purlins	16
(9) Purlin Inserts	8
(10) Insulation	4
(11) Eve Trim	4
(12) Roof Sheet Metal	16
(13) J-Trim	4
(14) Gable Sheet Metal Kits	4
(15) Rake Trim Left	2
(16) Rake Trim right	2
(17) Ridge Cap	2
Frame Screws – Regular	
Sinker Screws – Roof Color	
Sinker Screws – Trim Color	
Stitcher Screws – Roof Color	
Stitcher Screws – Trim Color	
Anchor Stake	6
Double Sided Self Adhesive	1



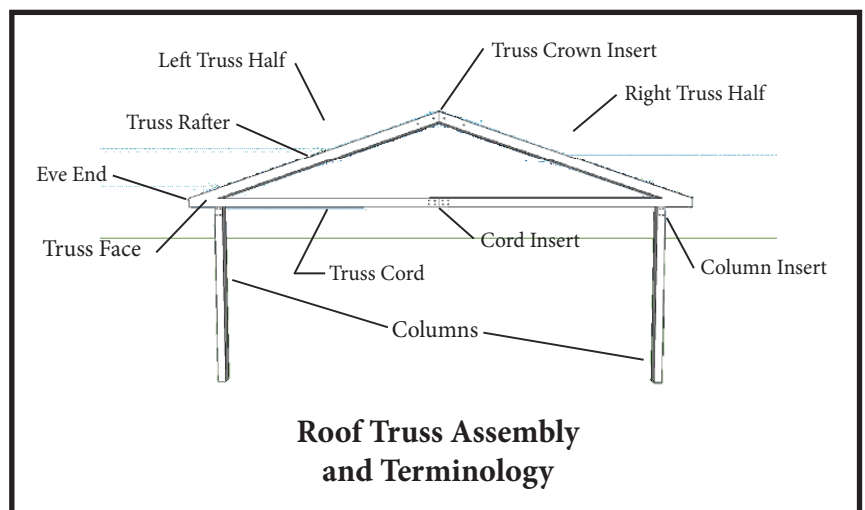
Frame Screw

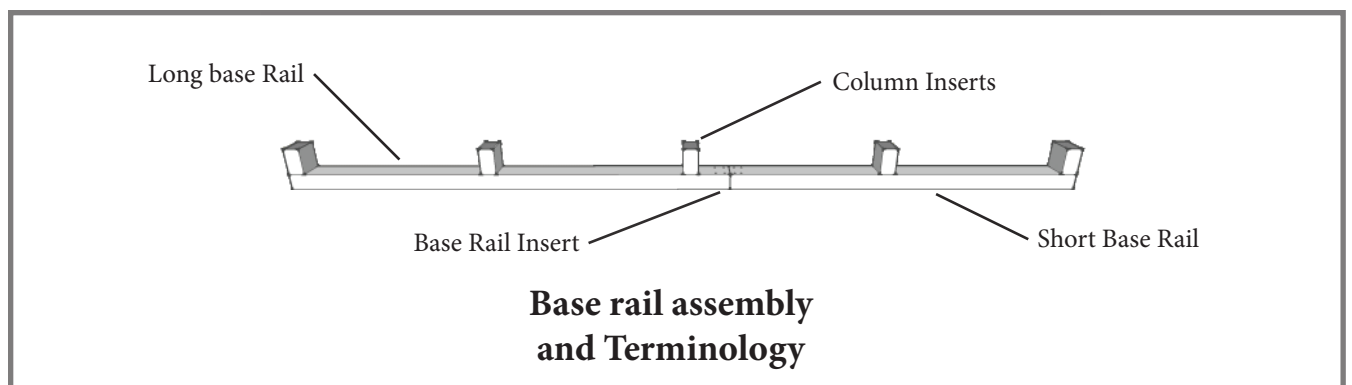
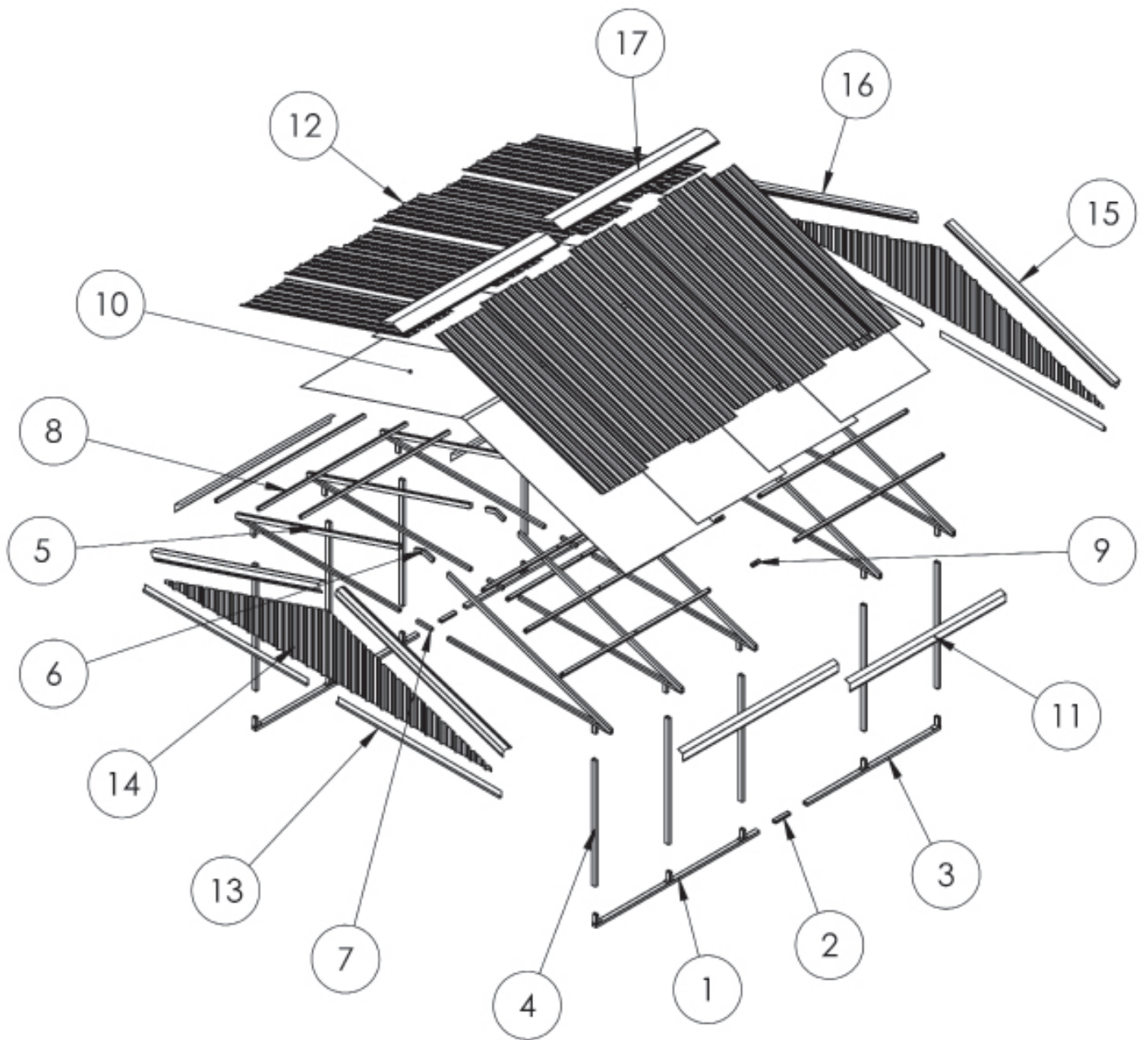


Sinker Screw



Stitcher Screw





Canopy Installation

Site Preparation

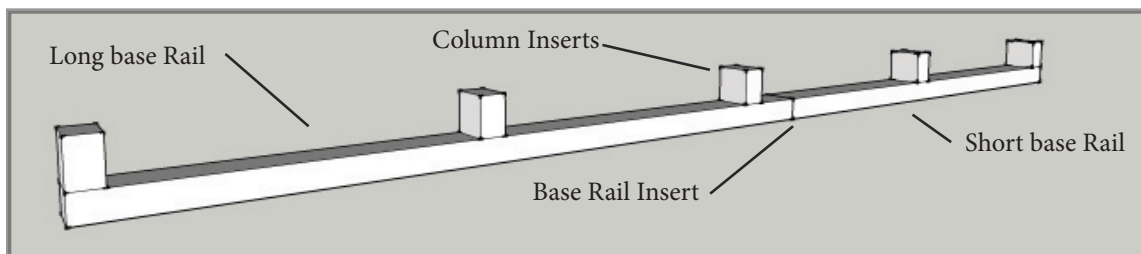
It's important to have the site ready for the installation of the canopy. The frame is designed to be placed either onto a concrete foundation, anchored with concrete piers, or staked into the ground. There is likely more than one way to properly anchor the canopy, however, we provide three different options.

Important:

If a concrete slab is to be poured, preparing the ground by leveling and compacting may be necessary. Make sure the area is level both side to side and front to back. Failure to erect the structure on level ground may cause poor results in the installation process.

Make sure you have adequate room around the perimeter of the canopy to be able to move the ladders and handle the materials.

Base Rail Assembly



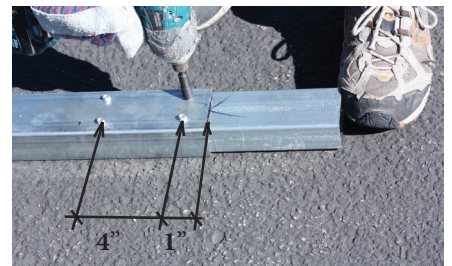
Step 1 - Base rails are shipped in two pieces per side and are assembled using Base rail inserts. Mark a line half way on each of the two base rail insert to reference where to stop the insert into the base rail (**photo 4**).

Step 2 - Install insert into the longer base rail and stop at mark. Attach with four framing screws as show in (**photo 5**).

Now slide the shorter base rail over insert and repeat the attachment on the other side with four more screws. Repeat for the other base rail assembly.



(photo 4)



(photo 5)

Option 1: Direct Staking

The canopy is delivered with rebar stakes that can be used to either directly stake the canopy down into firm ground or in option 2 page 8 as an anchor for concrete piers.

The Simplest method to anchor the canopy is to pound the supplied stakes into the ground with a hammer after the base rails are properly spaced. (See Positioning Base Rails below.)

Note:

In areas where there are high wind loads, we highly recommend using permanent anchors to hold down the canopy as in Option 2 or 3. (See page 8.)

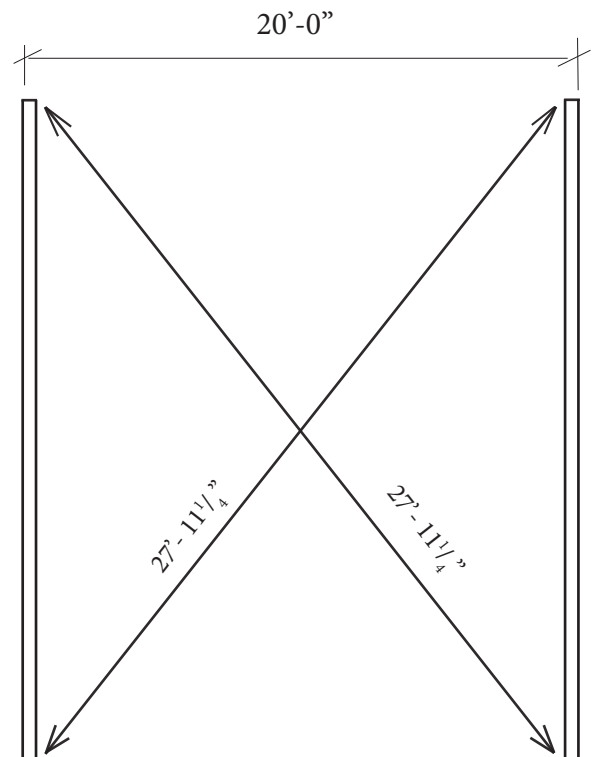


Positioning Base Rails

It's critical that the base rails are properly oriented when anchored.

Failure to properly install the base rails will cause the rest of the installation to be difficult, or impossible.

Ensure that the base rails are the proper width apart, lying flat and parallel to each other. Check this by having the diagonal measurements equaling the same from inside corner to inside corner, approximately (27'-11 1/4"). If the diagonal measurements are not the same, then the base rails are not square and must be corrected (**fig 1**).



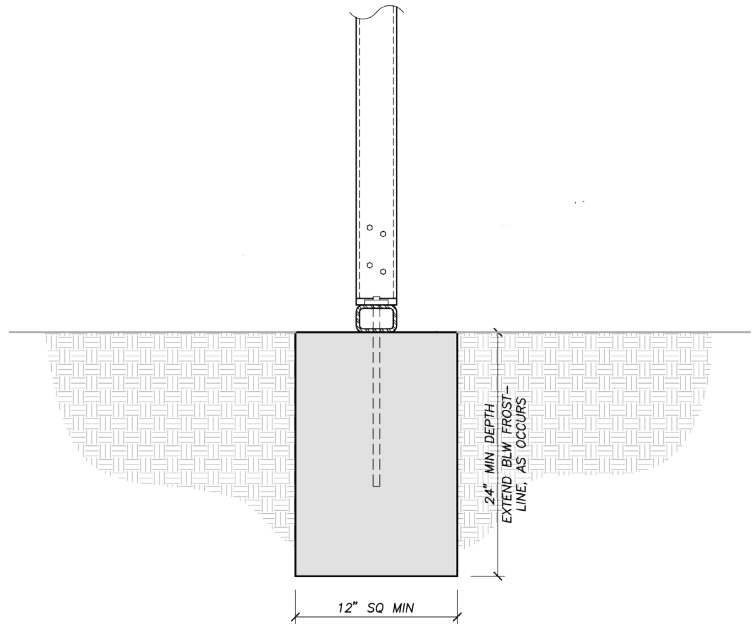
(fig 1)

Option 2 : Anchoring to New Concrete Pier

The second simplest method to anchor the canopy frame is to pour concrete piers. Layout the base rails per the previous instruction (see Positioning Base Rails page 7) and mark the locations where the Anchor Stake are to be located. Remove the base rails and dig each hole a minimum of 24" or down to the frost line, whichever is greater (**fig 2**).

Once the holes are dug, fill with concrete, replace the base rails over the holes and make the necessary measurements to ensure proper placement. Insert the supplied rebar stakes into the wet concrete. Double check the measurements to ensure that the base rails are in the proper position. Concrete should cure for 24 hours before canopy assembly.

(fig 2)

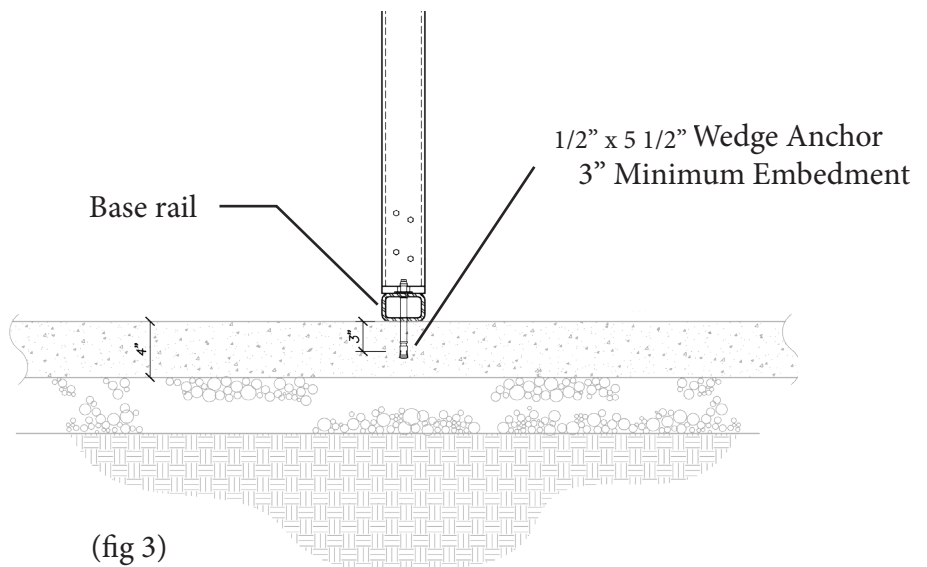


Option 3 : Anchoring to Existing Concrete Slab

If you already have a level concrete slab, you have the option of using wedge anchors (not provided) to anchor directly to the concrete slab. Layout the base rails per the previous instruction and mark the locations where the anchors are to be located. Using the hammer drill and 1/2" x 8" concrete bit, drill a minimum of 3 1/2" into the concrete slab for each anchor location (**photo 1**). Be aware that the vibration from the drill could move the base rail, be sure to double check that it is in the proper location prior to drilling the next hole. Once the holes are drilled, verify that they are deep enough before installing the wedge anchors (**fig 3**). Follow the anchors installation instructions. Be mindful not to overtighten the bolt and crush the base rail tube.

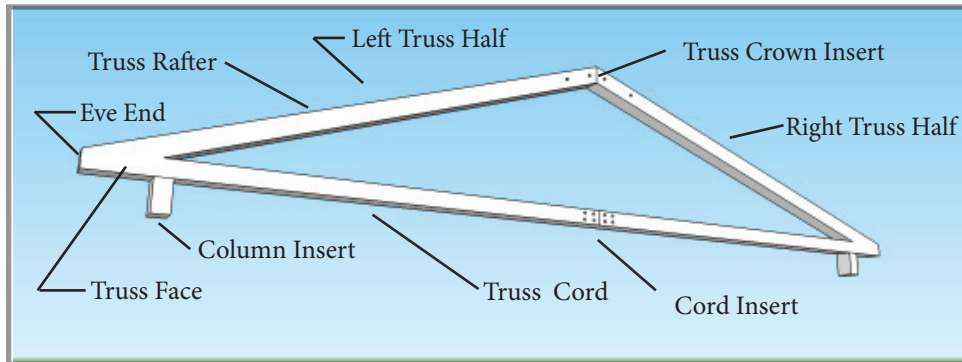


(photo 1)



(fig 3)

Frame Assembly



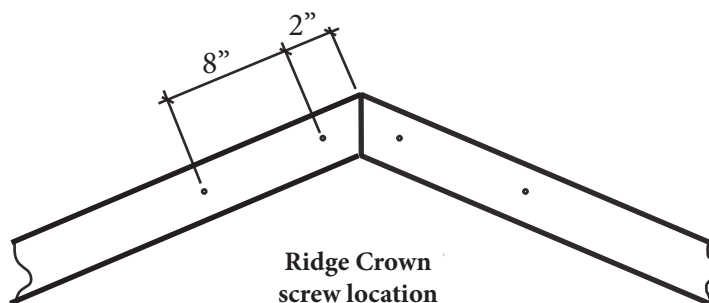
Roof Truss Assembly

Step 1 - Verify the placement of the Base rail assembly for squareness and correct rail separation.

Tip: Laying the truss components at least 8 feet in front of the Base rails will help simplify the ease of assembly.

Step 2 - In preparation for assembly, stack all the truss halves-eparating them, half on left and half on right. Using dimensions in (fig 4, page 10) measuring from the eve end moving to ridge, mark the purlin locations using a square and marker (photo 6).

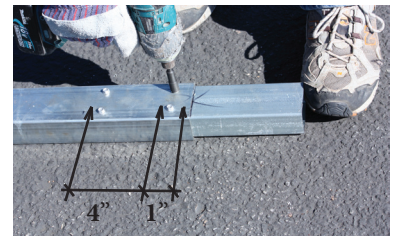
Step 3 -To assemble right and left truss halves, mark Cord Insert as shown in (photo 4). Begin by sliding cord insert into left truss cord (photo 5) and attach with frame screws. Assemble right and left truss sections by sliding Ridge Crown Insert into both right and left truss ridge crown openings leaving them one foot apart. Line up the end of right cord with opening on opposite truss cord section and slide the two truss halves together (photo 7). Complete the assembly by attaching the truss cord as above. Attach ridge crown using frame screws as shown in (fig



(fig 5)



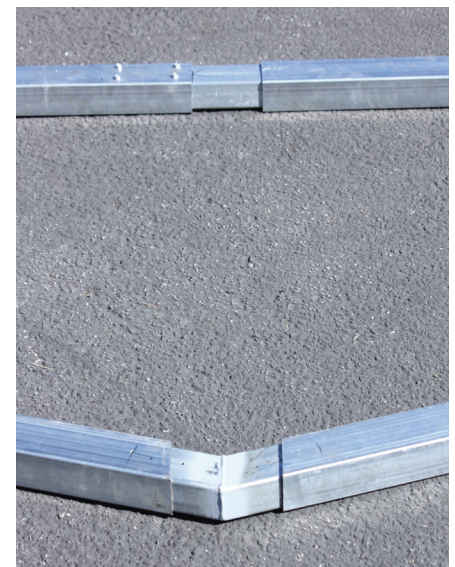
(photo 4)



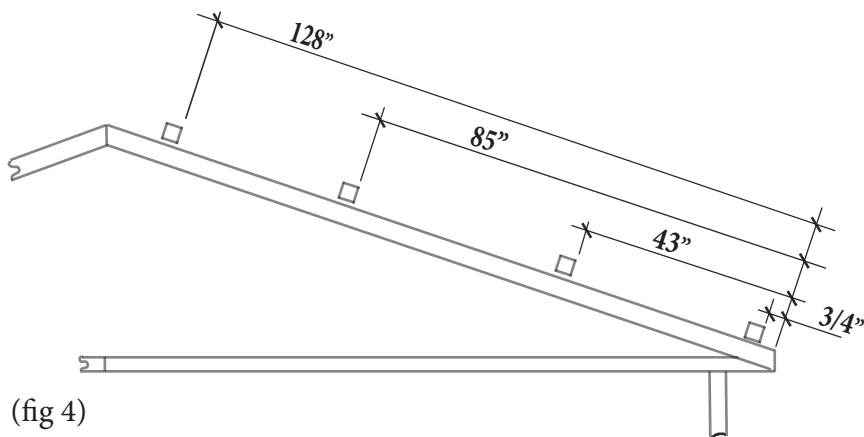
(photo 5)



(photo 6)



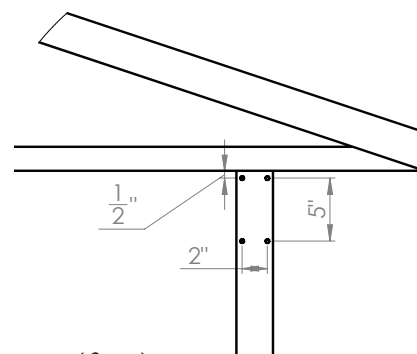
(photo 7)



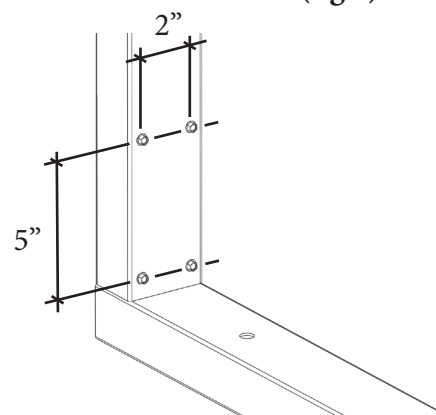
Step 4 - Install the columns to the rafter by slipping them over the column inserts. Check that the columns are at right angles to the rafter by using a framing square as shown (**photo 8**).

You can verify that the columns are square by measuring the distance at the bottom of the columns. This distance should be the same as the width of the frame (20 feet apart). Attach all columns as shown (**fig6**). Each leg requires 4 frame screws.

Note: It is best to complete and raise one frame at a time. When raising Roof Truss Assemblies, two people are necessary to lift the rafter and column assembly to place it. Face the screw heads towards the inside of canopy on both end rafters. Face screws to the back on the center frames.



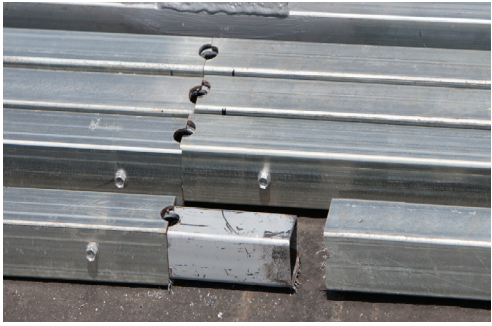
Step 5 - Begin installing Roof Truss Assembly at the farthest point on the base rails. Rest the end of the column against base rail column insert (**photo 9**). Now raise Roof Truss Assembly and place onto base rail column insert. Repeat Steps 2-4 for all inner and end trusses. Sight down the bottoms of all the eaves next to the columns to confirm that they are even. If adjustments to a low eave are required, lift the column as needed. Raise the truss eve so it is even with the others, then secure the columns to the base rail with 4 frame screws (**fig 7**)



Attach to Base Rail Detail



Purlin Assembly



(photo 11)



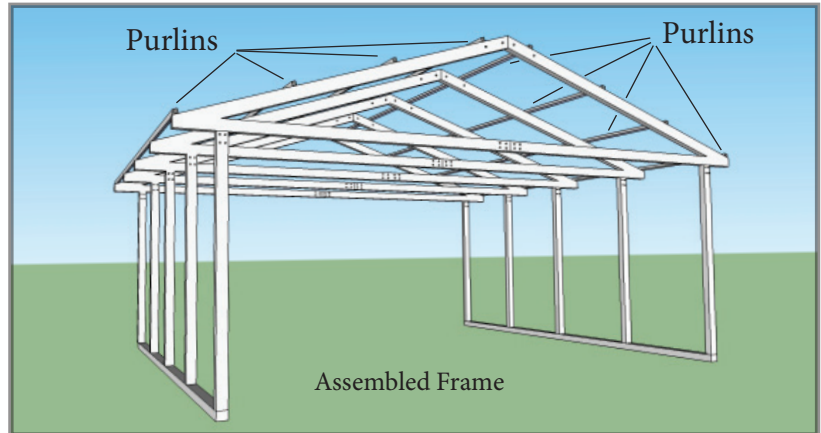
(photo 12)



(photo 13)



(photo 14)



Step 1 - Each 20 foot purlin is shipped as two ten foot pieces and one insert. Begin by laying out the purlins next to the base rails on each side of the canopy. With the large holes facing up, slide the insert in so the hole in the insert lines up with the half hole on the purlin (**photo 11**). On the side install a frame screw 4" back, then slide the other half of the purlin onto the insert and attach. Continue until all 8 purlins are complete (4 on each side).

Step 2 - The purlins should be with the large holes facing up laying tight next to base rails. Line up the ends of the assembled purlins with the ends of the base rails. Mark next to the holes at the edges of each column (**photo 12**).

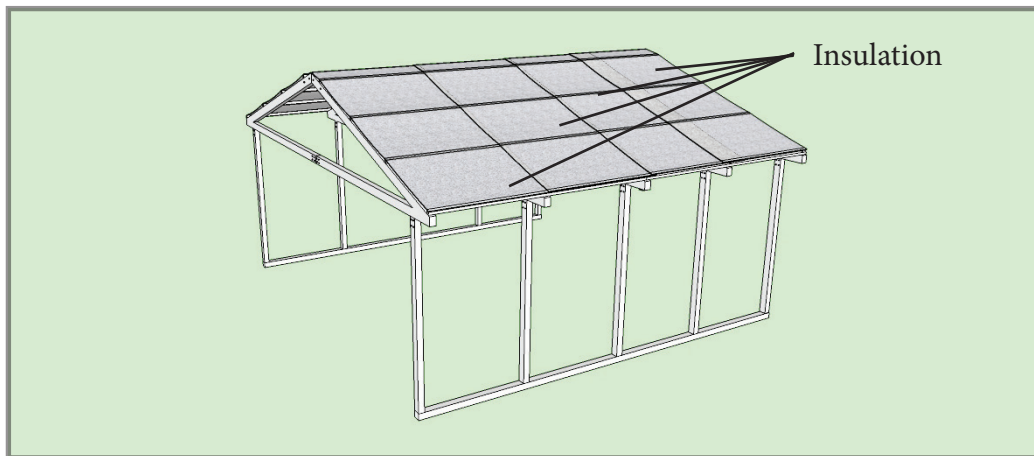
Note: Installing purlins

It is recommended that you start from the top, working your way down. It is very important that the purlins are installed in the proper locations or else other components such as eve trim and light brackets may not fit. Please verify that everything is correct before the purlins are installed.

If a mistake is made, the only solution will be to move the purlins into the correct location.

Step 3 - Screw through the purlin hole and into the rafter using frame screws (**photo 13**). The purlins should be aligned using the marks made in the Truss Assembly step 2 and step 6 on page 9 as guides. The holes should be centered to the rafter as well as the purlin being flush with the outside face of the end rafter (**photo 14**). It may take some effort to position the rafters appropriately so that all the purlin locations line up.

Insulation



Note: It is not recommended to install the Insulation on a windy or breezy day as the adhesive will not likely hold in these conditions.

Step 1 - Apply the double sided adhesive tape on top of both the outermost purlins from end to end as shown, leaving the tape cover on for now (**photo 16**).

Step 2 - Place the first of 4 sheets of insulation over the canopy, white side facing down. The insulation will be several inches longer than need be on both sides. This is normal and will be trimmed in a later step. The insulation also has a strip of self-adhesive tape, on the first sheet of insulation this will be used to assist in securing the insulation to the purlins towards the end of the canopy. At this time remove the tape cover on both the purlins as well as the insulation. With two people holding the insulation, pull it tight and square with the frame, pressing down firmly onto the self-adhesive tape to ensure that the insulation is securely placed (**photo 17**).

Step 3 - Using a utility knife, trim the excess insulation flush with the outmost purlins as shown (**photo 18**).

Step 4 - Follow same procedure as in step 2 with each sheet of insulation noting that the self-adhesive on the insulation will be used to adhere to the previous sheet of insulation where they overlap. Trim excess insulation as in step 3.

Note: Overlap the previous sheet so the last sheet's edge lays even at the end face of the rafter (**photo 19**).



(photo 16)



(photo 17)

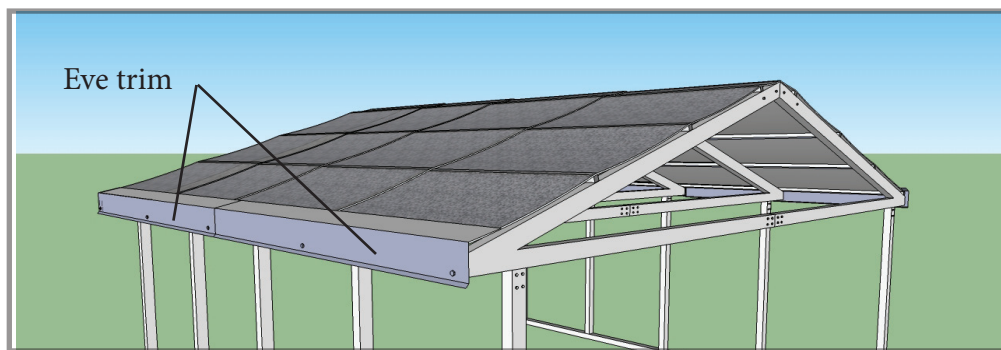


(photo 18)



(photo 19)

Eve Trim



Step 1 - Begin installing the first Eve trim at the back of canopy frame working forward. Place trim on top of Insulation and end of rafter with drip edge down. Extend it past outside of rafter face $1\frac{1}{4}$ " (**photo 20**)(**fig 8 on page 14**).

Note: It's very important to press down firmly to compress the insulation before fastening it down. Otherwise, when the roof sheet is installed, it will tend to cause it to deform.

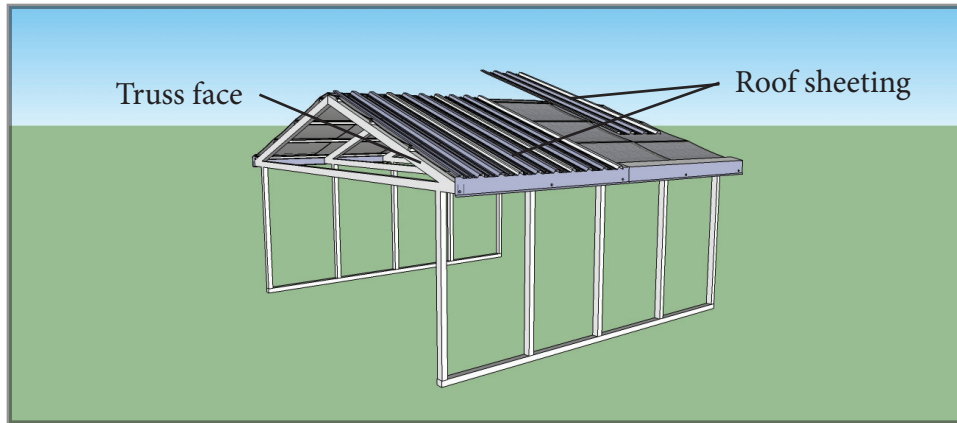
Step 2 - Measuring from the bottom of the eve $1\frac{1}{4}$ ", fasten the eve trim to the rafter ends with matching color sinking screw (**photo 21**). Leave the last rafter screw out so the front trim can overlap at the middle. Continue to the front trim holding $1\frac{1}{4}$ " from face of rafter. Attach at each rafter end and repeat step 1 and 2 on opposite side (**photo 21**).



(photo 20)



(photo 21)



Warning - Do not attempt to stand on roof panels that have not been attached.



(photo 22)

Step 1 - The placement of the first sheet is the most critical. The sheet is not symmetrical and must be started as shown (photo 22) with the short overlap facing out. Make sure the sheet is square to the frame. It must be positioned a set distance from the outside truss face as well as from the eve trim (fig 8)(fig 9). Use your square to verify these measurements (photo 23).

- Overhang from the truss face: $1\frac{1}{4}$ " (fig 8)
- Overhang from eve trim face: $2\frac{1}{2}$ " (fig 9)

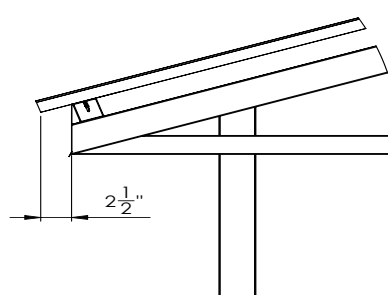


(photo 23)

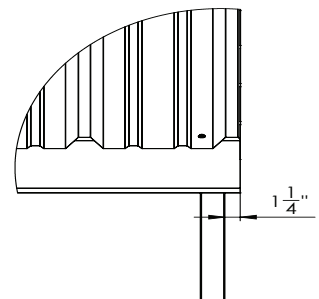
Note: These overhangs are critical. If the overhang measurements are not followed, the rake trim will not fit properly. The overhang from the truss face is necessary for the roof sheets to space out properly, and the overhang from the eve trim is required because the rake trim is pre-cut for this overhang (photo 24).



(photo 24)



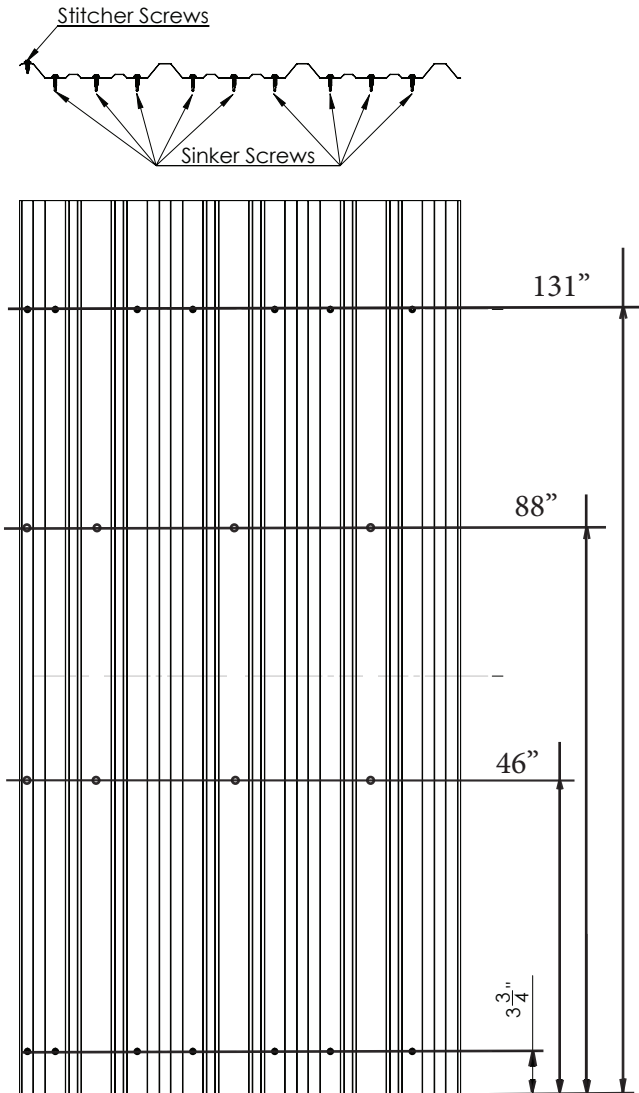
Left: Side View
(fig 9)



Right: Front View
(fig 8)

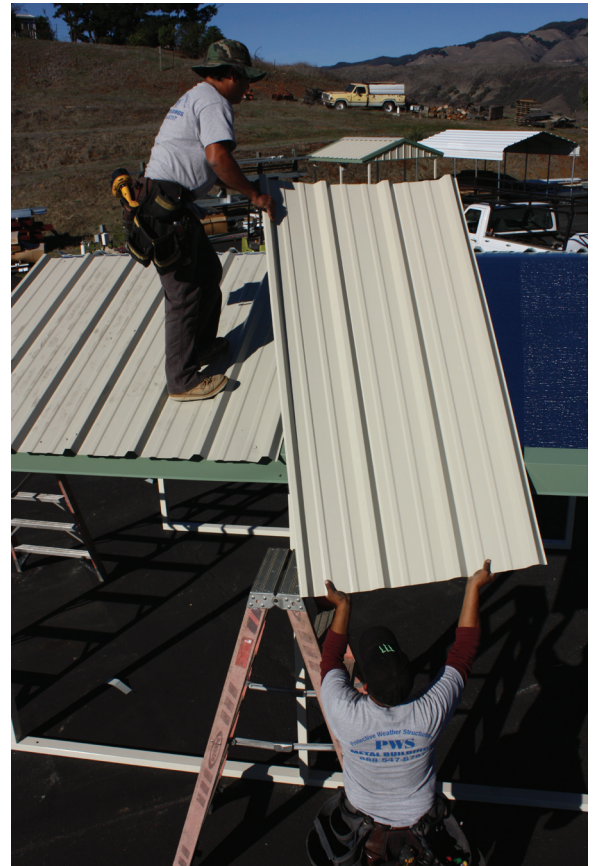
Note: Double check the 2½” overhang and make sure the sheet is perpendicular to the purlins. The stitcher screws are only used to fasten sheet metal to sheet metal. Make sure the screws are the correct type and color.

Step 2 - Follow the pattern below to fasten the sheet to the purlins (**fig 9**). Mark the location by measuring out where the screws go before lifting sheet onto the roof (**photo 25**). It is recommended that one individual is on the roof who will fasten the sheet with screws, while another individual makes sure the sheet is positioned correctly (**photo 26**). It will take 8 sheets per side with the last sheet overlapping the previous, by one third.



Screw Pattern - Roof

(fig 9)

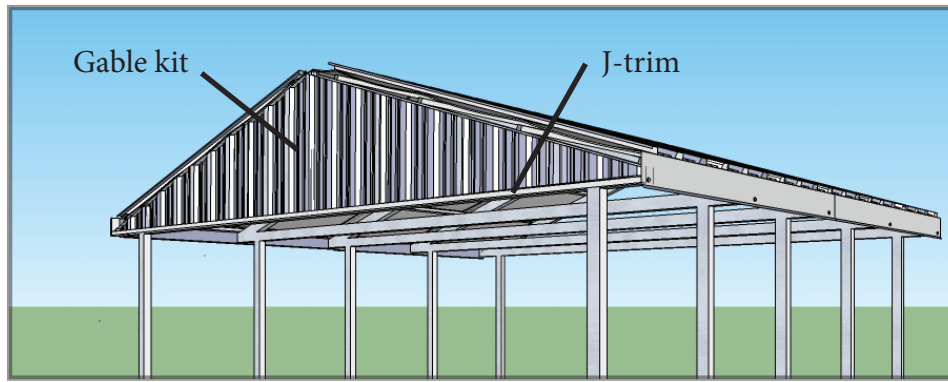


(photo 25)



(photo 26)

Gable and J-trim



(photo 27)



(photo 28)



(photo 29)

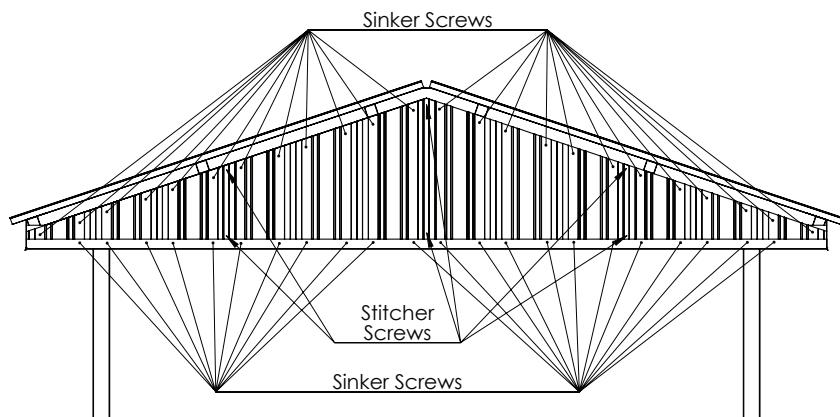
Step 1 - Align the bottom of the J-trim with the bottom of the truss cord and extend end of J-trim to eve trim (photo 27). Using frame screws, fasten the J-trim to the face of the truss in from each end 2". These screws will be removed later. Repeat this step on the other side. This piece will sit inside the first J-trim piece in the center of the frame.

Step 2 - The Gable kit comes in five pre-cut pieces per end. Start with the center left section (photo 28). Use a level to verify that the ribs on the sheet metal are indeed vertical before fastening with the same color screws. The sheet metal should sit down into the bottom of the J-trim. Check that J-trim is even with bottom of rafter cord, as well as relatively flush with the top edges of the rafter before attaching.

Note : Each sheet to the left of the center will slip under the previous sheet. Sheets to the right of center will over lap the previous sheet. Due to variations in cutting, the sheets may be somewhat irregular, however this irregularity will be covered by the rake trim. Just as in the roof sheet metal, use stitcher screws on the high ribs where it is a sheet metal to sheet metal. Use sinker screws where you screw into the rafter. The diagram on page 17 shows where to fasten the gable pieces (fig 10).

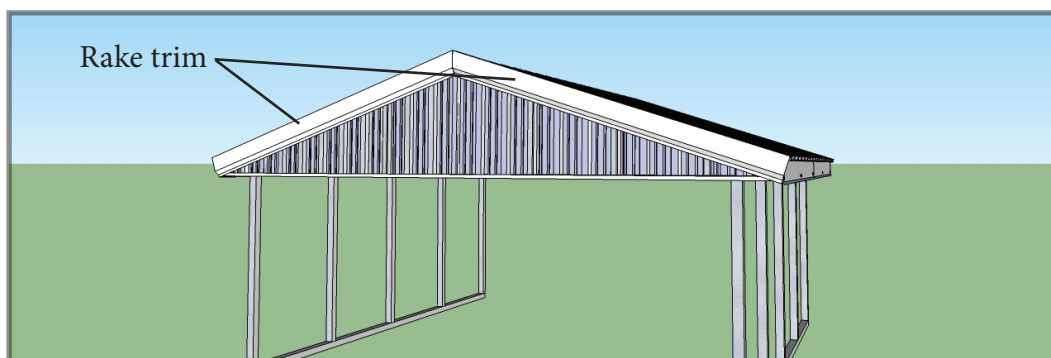
In order to hide the bottom screws, try to screw down as low as possible in the J-trim without marring its paint finish (photo 29). Make sure the screws are down far enough so that they are going into the cord of the rafter, a bit driver extension will make this easier to do.

Step 3 - Repeat steps 1 & 2 for the other end of the canopy.



Screw Pattern - End Gables
(fig 10)

Rake Trim



Step 1 - Locate the left side, uncut Rake trim, and position it as shown in **(photo 30)**. If the roof sheet was fastened in the correct location, the top edge should line up directly in the middle of the peak, and the bottom edge should line up with the roof sheet. If it does not align properly, the only solution would be to move the roof, if the rake trim is too short, or cut the top of the rake trim if it's too long.



(photo 30)

Step 2 - Before fastening the rake trim to the roof sheet and end gable, check to make sure the trim's shape is square itself and square to the sheet. This can be done several ways, one method is to use a framing square. Another way is to use a level, **(photo 31)**. However, the accuracy of this method is directly related to how level the ground is that the canopy is built upon.



(photo 31)



(photo 33)



(photo 32)



(photo 34)



(photo 35)



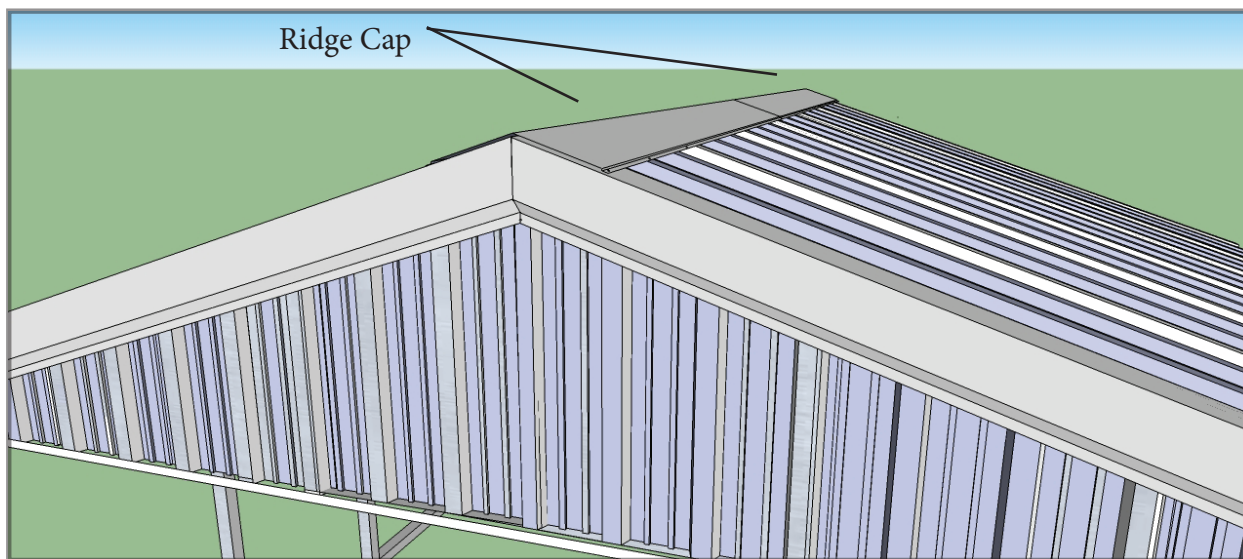
(photo 36)

Step 3 - Using the same color stitcher screws as the trim, the first screw should be into the face of the J-trim drilling through the edge of the rake trim as shown in **(photo 32)** and **(photo 33)**. After verifying that everything is square and in place, fasten a sinker screw down through top edge of the rake trim and down through the roof sheet into the center of the purlin below. Continue on every purlin. You will want to make sure you have the location of the purlin correct before drilling each screw. Up the outside of the rake trim, use stitcher screws to attach to the high ribs of the end gable sheet metal. Match near the screws location in the purlins. At this time, do not attach a screw at the peak. However, you can drill the remaining sinker screw through the top purlin where the rake trim pieces come together **(photo 34)**.

Step 4 - Just as the left piece, make sure it is square and straight before attaching. The right side rake trim piece is cut such that it makes a vertical seam in the front for aesthetics **(photo 35)**. The top flap is meant to fold over the left piece, making it such that water can't get in as easily. It may be necessary to manipulate the flap so that it fits well. Attach the right trim piece according to the same instructions in previous steps 1 through 3.

Step 5 - The last stitcher screw goes through both rake trim pieces and into the middle high rib of the end gable sheet **(photo 36)**. Each rake piece should have a total of 8 screws holding it down.

Step 6 - Repeat steps 1 through 5 for the other end of the canopy.



Note : The ridge cap attaches in two pieces. Be careful while handling, they can buckle which will leave an undesirable crease.

Step 1 - Begin by laying the first ridge cap starting from the back. Align the ridge cap end even with the outside face of the rake trim (**photo 37**). Using color matched stitcher screws, attach through the edges of the ridge cap into the rake trim on both sides. Align the other end of the ridge cap with the center of roof ridge. Do not attach at this time.

Step 2 - Repeat step 1 for the front trim, overlapping the back ridge in the middle. Now attach to the top ribs of the roof sheet metal through both ridge edges at the overlap. Continue to attach at the high ribs of the roof about every 4 feet. In total you should have used 14 screws.



(photo 37)

